

5017

We claim:

1. A vertebral endplate chisel comprising:

- 5 a) a base having upper and lower portions, and proximal and distal portions,  
b) an upper shaving portion extending distally from the upper base portion,  
c) a lower shaving portion extending distally from the lower base portion,  
the upper and lower shaving portions being disposed substantially parallel to each  
other and each having a width, and  
10 d) a guide integrally connected to and extending distally from the base and having a  
width, the guide located between the shaving portions and having a width

wherein the width of the guide is no more than 95% of the width of the upper shaving  
portion.

15 2. The chisel of claim 1 further comprising e) a handle located proximal to the proximal  
portion of the base.

3. The chisel of claim 2 wherein the handle terminates in a substantially flat surface  
which provides an impact surface.

4. The chisel of claim 2 wherein the handle comprises a distal perimeter and a proximal  
perimeter, the distal perimeter being smaller than the proximal perimeter.

20 5. The chisel of claim 1 further comprising e) an extraction means located proximal to  
the base and shaped so as to connect to an extraction device.

6. The chisel of claim 1 wherein the distal portion of the base comprises upper,  
intermediate and lower portions, each having a width, wherein at least a distal portion  
of each of the upper, intermediate and lower portions has a substantially equal width,  
25 so that the distal end of the base comprises a substantially blocky portion.

7. The chisel of claim 1 wherein the base is shaped so as to provide debris pathways.

8. The chisel of claim 1 wherein the base comprises upper, intermediate and lower  
portions, each having a width, and wherein the intermediate portion width is thinner  
than the upper and lower portion widths, thereby providing flutes for removal of the  
30 debris.

9. The chisel of claim 1 wherein the base comprises upper, intermediate and lower portions, wherein the upper and lower portions of the base do not contact at least a portion of the intermediate portion, so that debris pathways are formed therebetween.

10. The chisel of claim 9 wherein the intermediate portion comprises lateral portions, and the upper and lower portions are integrally connected to the lateral intermediate portions.

11. The chisel of claim 1 wherein the base has an integral I-beam-like shape comprising :

- i) an intermediate portion,
- ii) an upper portion integrally connected to the intermediate portion,
- iii) a lower portion integrally connected to the intermediate portion,

wherein each of the intermediate, upper and lower portions has a width, and wherein the width of each of the upper and lower portions is greater than the width of the intermediate extending portion.

12. The chisel of claim 1 wherein the I-beam-like shape includes an I-beam shape.

13. The chisel of claim 1 wherein the I-beam-like shape includes a bulging I-beam shape.

14. The chisel of claim 1 wherein the I-beam-like shape includes a bow-tie shape.

15. The chisel of claim 1 wherein the upper shaving portion comprises an outer surface and an inner surface whose intersection forms a tip having an angle  $\alpha$  suitable for shaving endplates.

16. The chisel of claim 15 wherein the angle  $\alpha$  is between 20 and 40 degrees.

17. The chisel of claim 15 wherein the lower shaving portion comprises an outer surface and an inner surface whose intersection forms a tip having the same angle  $\alpha$  as that of the upper shaving portion.

18. The chisel of claim 1 wherein the intermediate base portion narrows at the distal end thereof to form at least one secondary orthogonal shaver.

19. The chisel of claim 18 wherein the guide includes a neck extending distally from the intermediate portion of the base, and wherein the secondary orthogonal shavers are located on either side of and proximal to the neck.

20. The chisel of claim 1 wherein the guide comprises a neck portion extending distally from the base and a head portion extending from the neck, wherein the head comprises upper and lower lands.
21. The chisel of claim 20 wherein at least a portion of each land extends further distally than the shaving portions.
22. The chisel of claim 1 wherein the guide is substantially centered between the shaving portions.
23. The chisel of claim 1 wherein the guide and the upper shaving portion each have a width, and the width of the guide is no more than 50% of the shaving portion width.
24. The chisel of claim 1 wherein the guide width is no more than 25% of the shaving portion width.
25. The chisel of claim 1 wherein the guide comprises a neck portion extending from the base and a head portion extending from the neck, and the head is sufficiently thin and centered so that the entire guide width is located within the middle one-third of the width of the shaving portions.
26. The chisel of claim 25 wherein the guide is located within the middle one-fifth of the width of the shaving portions.
27. The chisel of claim 1 wherein the guide includes a neck portion extending distally from the intermediate extending portion and a head portion extending distally from the neck.
28. The chisel of claim 27 wherein the neck is rectangularly shaped.
29. The chisel of claim 27 wherein the neck widens at an angle  $\beta$  as it extends distally.
30. The chisel of claim 29 wherein the upper shaving portion comprises an outer surface and an inner surface whose intersection forms a tip having an angle  $\alpha$  suitable for shaving endplates, and wherein the angle  $\beta$  is substantially equal to the angle  $\alpha$ .
31. The chisel of claim 27 wherein the head has a tapered distal portion which narrows distally.
32. The chisel of claim 27 wherein the taper distal section of the head forms an angle  $\gamma$  of between 30 and 60 degrees.
33. The chisel of claim 27 wherein the head has an axial cross section having a bullet shape.

34. The chisel of claim 27 wherein the head has a nipple-like distal portion.
35. The chisel of claim 27 wherein the head has a radial cross-section having a circular shape.
36. The chisel of claim 27 wherein the head has an axial cross section having a rectangular shape having a height and a width.
37. The chisel of claim 36 wherein the head has a height and a width, and is dimensioned so that the height is at least 5 times the width.
38. A vertebral endplate chisel comprising:
  - a) a base having upper, lower and intermediate portions, and proximal and distal portions,
  - b) no more than two shaving portions for contouring vertebral endplates, comprising:
    - i) an upper shaving portion extending distally from the upper portion, and
    - ii) a lower shaving portion extending distally from the lower portion,the upper and lower shaving portions being disposed substantially parallel to each other to define a separation distance, each shaving portion having a vertically extending portion extending toward the opposite shaving portion for a distance of between 0% and 30% of the separation distance, and
  - c) a guide extending from the intermediate portion of the base.
39. The chisel of claim 38 wherein each vertically extending portion extends toward the opposite shaving portion for a distance of between 0% and 15% of the separation distance.
40. The chisel of claim 38 wherein each shaving portion has substantially no vertically extending portion
41. A vertebral endplate chisel comprising:
  - a) a base having upper and lower portions, and proximal and distal portions,
  - b) an upper shaving portion extending distally from the upper portion,
  - c) a lower shaving portion extending distally from the lower portion,the upper and lower shaving portions being disposed substantially parallel to each other, and

d) a single guide disposed between the shaving portions and extending distal to the shaving portions, and having a height and a width, wherein the height of the single guide at least 5 times greater than its width.

42. A vertebral endplate chisel comprising:

- 5 a) a base having upper and lower portions extending distally therefrom,
- b) an upper shaving portion extending distally from the upper portion,
- c) a lower shaving portion extending distally from the lower portion,
- the upper and lower shaving portions being disposed substantially parallel to each other, and
- 10 d) a single guide disposed between the shaving portions and extending distal to the shaving portions, and having a height and a width, wherein the width of the single guide no more than 50% of the width of the upper and lower shaving portion.

43. A vertebral endplate chisel comprising:

- 15 a) a base having upper, intermediate and lower portions, and proximal and distal portions,
- b) an upper shaving portion extending distally from the upper portion,
- c) a lower shaving portion extending distally from the lower portion,
- the upper and lower shaving portions being disposed substantially parallel to each other,

20 wherein the intermediate base portion narrows at the distal end thereof to form secondary orthogonal shavers.

44. A vertebral endplate chisel comprising:

- a) a base having an integral I-beam-like shape comprising :
  - 25 i) an intermediate portion,
  - ii) an upper portion integrally connected to the intermediate portion, and
  - iii) a lower portion integrally connected to the intermediate portion,

wherein each of the intermediate, upper and lower portions has a width, and

30

wherein the width of each of the upper and lower portions is greater than the width of the intermediate extending portion.

FIG. 2